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ABSTRACT

This study examined the work force attainments of three groups of deaf adults: persons with no college degrees, persons with sub-Baccalaureate degrees, and persons with Bachelor degrees. Data were derived from the "Alumni Feedback Questionnaire" of the National Technical Institute for the Deaf and from the "Secondary School Graduate Follow-up Program for the Deaf." They were compared on the following variables: unemployment rate, socioeconomic status, and vertical mobility. Results showed that deaf adults with degrees fared much better in the work force than did deaf high-school graduates in a number of ways: (1) Their unemployment rates were substantially lower. (2) They were employed much more often in managerial/professional occupations, indicating that deaf people increased their employment in white collar careers as they attained higher degrees. (3) They earned significantly higher wages over the course of a lifetime. In the area of upward mobility, a degree appeared not to make as much difference. Deaf adults without college degrees and those with Bachelor degrees showed little vertical mobility; those with sub-Bachelor degrees showed some gains over a 15-year period, probably due to entering occupational areas with career ladders. (Author/JDD)

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The Effect of Postsecondary Education on the Occupational Attainments of Deaf Adults

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EC 210 280

ABSTRACT

The purpose of this research is to examine the effects of postsecondary education on the professional lives of deaf adults. In order to measure this, we examined the work force attainments of three groups: (1) persons with no college degree; (2) persons with sub-Baccalaureate degrees; and (3) persons with Bachelor degrees. They were compared on the following variables: (1) unemployment rate; (2) socioeconomic status, as measured by occupation, earnings, and Duncan SEI score; and (3) vertical mobility, as measured by changes in the Duncan SEI over time. Results were as follows:

The positive effect of postsecondary technical training on the professional lives of deaf adults is indisputable. Deaf adults with degrees fare much better in the work force than do deaf high school graduates in a number of ways:

First, their unemployment rates are substantially lower. Compared to high school graduates, those with sub-Bachelor degrees reduce their unemployment rate by more than 60 percent, and holders of Bachelor degrees reduce their rate by nearly 90 percent. Deaf college graduates clearly find employment more easily than do non-graduates.

Second, their socioeconomic status is affected positively in several ways. First of all, the jobs they find are significantly different. They are employed much more often in Managerial/Professional occupations. A sub-Baccalaureate degree increases the probability of this type of employment by a factor of three; a Bachelor degree increases it by a factor of ten. Obviously, deaf people increase their employment in White Collar careers as they attain higher degrees.

Third, they earn significantly higher wages over the course of a lifetime. Sub-Bachelor graduates increase their weekly wages by 47 percent over those of high school graduates; Bachelor degree recipients increase theirs by a dramatic 116 percent. Finally, and closely connected with occupation and earnings, their Duncan socioeconomic index rating typically rises directly with educational attainment.

Obviously, degree attainment affects deaf people in many significant, positive ways. There exists substantial evidence of the need for postsecondary programs for deaf people.

One important area in which a degree appeared not to make as much difference is in upward mobility. Deaf adults without college degrees, and those with Bachelor degrees, showed little vertical mobility. Those with sub-Bachelor degrees did show some gains over a fifteen-year period. It may be that persons without degrees are notably lacking in basic skills that are apparently better developed in persons having sub-Bachelor degrees. In addition, those with sub-Bachelor degrees are more likely to enter occupational areas with career ladders and to pursue additional education that might be necessary for advancement.

Relative immobility of Bachelor degree graduates is a bit more difficult to explain. It may well be that they begin their careers much closer to their maximum professional potential than do holders of sub-Bachelor degrees. Most, in order to move up, have to move into management, and restricted communication skills make this especially difficult. Additionally, difficulties with receipt of incidental information may make it especially difficult to maintain professional currency at their occupational level.

INTRODUCTION

Historically, deaf people have lagged behind their hearing counterparts in most major measures of work achievement. Studies throughout the century (Best, 1914, 1943; Martens, 1937; Lunde & Bigman, 1959; Weinrich, 1972; Schein & Delk, 1974; MacLeod-Gallinger, 1986) have shown that deaf persons are heavily overrepresented in less prestigious Blue Collar occupations and typically earn substantially less than hearing workers. Additionally, Schroedel (1976) has noted that deaf workers experienced more restricted occupational mobility during a period of time (1920-1970) in which a great many Americans were upwardly mobile. Has this difference been due to the handicapping effects of deafness itself or to a relative paucity of educational opportunities accessible to deaf people?

Prior to the 1950's, the small number of deaf college graduates (the result of limited educational opportunities) made it difficult to address the question of the effect of education on the work force attainments of deaf people. However, primarily because of federal legislation and changes in societal attitudes, the last thirty-five years have seen a rapidly escalating enrollment of deaf persons in colleges, from 250 in 1950 to more than 8,000 in 1985 (Rawlings and King, 1986). The resulting increase in the number of graduates makes it possible to study the degree-career relationship for deaf people more closely.

The relationship is well known with regard to the general population (Jencks et al, 1977; Mincer, 1975; Bowen, 1977; Taubman and Wales, 1974; Young, 1984). Typically, higher education results in graduates having less difficulty in a number of areas: finding employment; obtaining a more satisfying, safer, more secure occupation; earning more money; and attaining a higher socioeconomic status. However, the extent of the degree-career relationship for deaf people has been largely undocumented until recently (Welsh and Walter, 1986).

Recent research (Schroedel, 1976; Welsh and Schroedel, 1982; Rawlings, et al, 1984; MacLeod-Gallinger, 1986; Welsh, 1986; Welsh and Walter, 1986)

has provided substantial evidence that college education is beneficial for deaf people. There is little known, however, about the connection between different levels of college education (i.e., different college degrees) and attainments in the work place. The purpose of this paper is to determine the strength of that connection by determining relationships between educational level and: (1) employment status; (2) socioeconomic status; and (3) upward mobility.

METHODS

In order to determine the impact of degree attainment, it was necessary to compare the performance of college graduates with that of persons not holding any college degree. Degree recipients are graduates of the National Technical Institute for the Deaf at the Rochester Institute of Technology (NTID at RIT) and were grouped into two categories: (1) Sub-Bachelor degrees (Diploma and Associate degrees); and (2) Bachelor degrees. Persons not holding college degrees form a third category and are alumni of twenty-seven schools for the deaf participating in the *Secondary School Graduate Follow-Up Program for the Deaf* (MacLeod-Gallinger, 1986).

The three groups were compared on the following variables:

(1) *Unemployment Rate*: The percentage of persons in the labor force who have neither full-time nor part-time employment (the standard definition used by the U.S. Bureau of Labor Statistics).

(2) *Socioeconomic Status*: A term that has been operationally defined in many different ways, but is here defined as consisting of the following:

(a) *Occupation*: U.S. Bureau of the Census one-digit classification system (U.S. Bureau of the Census, 1982). The broad groupings are: (1) Managerial/Professional; (2) Technical/Sales/ Administrative Support; (3) Service; (4) Farming, Forestry, and Fishing; (5) Precision Production, Craft, & Repair; and (6) Operators, Fabricators, & Laborers. Although the Census no longer makes formal distinctions between White Collar and Blue

Collar workers, nearly all occupations traditionally considered White Collar are in the first two groupings listed above. Because of relatively small numbers of persons in groups (3) and (4) above, they are combined into an "Other" category in subsequent tables.

(b) *Earnings*: Both reported gross weekly and projected lifetime earnings. Higher earnings are assumed herein to be reflective of greater occupational attainment.

(c) *Duncan Socioeconomic Index (SEI)*: (*Duncan, 1961; Stevens and Cho, 1985*): Via the Duncan SEI, occupations are assigned a score between 1 and 100[1]. Scores are a weighted combination of three factors: the amount of education required to enter an occupation; the wages associated with that occupation; and selected prestige measures (see Featherman and Stevens, 1982).

(3) *Vertical Mobility*: Defined as changes over time in the Duncan SEI.

DATA SOURCES

Data for this study were derived from two different sources:

(1) Data for college graduates were derived from responses to the 1982-1986 versions of the NTID *Alumni Feedback Questionnaire* (AFQ)[2] (Welsh, 1986). Data were collected via this instrument on the employment status, occupation, and earnings of responding[3] deaf RIT graduates. Respondents had, as of 1986, been in the work force between one and seventeen years and had an average age of 29.9 years.

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[1]Some examples of Duncan SEI scores are as follows: aerospace engineers, 83.5; computer systems analysts, 73.0; dental hygienists, 67.2; real estate salespersons, 52.0; secretaries, 34.7; meter readers, 23.9; printing machine operators, 23.5; private household cleaners, 14.8.

[2]Questionnaire data are by definition self-reported, and thus often open to question for several different reasons. In this case, the AFQ was tested by Welsh and Walter (1986) and found to yield data that were quite reliable, valid, and generally free of response bias.

[3]Numbers vary by year of survey, from 525 in 1982 to 780 in 1986.

(2) Data for persons without college degrees were derived from responses from the 1982-1986 versions of the *Secondary School Graduate Follow-up Program for the Deaf* (SSFP) (MacLeod-Gallinger, 1986). This survey yielded data comparable to AFQ data for graduates[4] of twenty-seven U.S. high schools for the deaf. The subset of respondents chosen for this analysis had no college degree. They had been in the work force between five and twenty years and had an average age of 29.4 years.

RESULTS

Unemployment

The work ethic has always been an extremely important part of the American system of values (Rosen, 1959; Hyman, 1966). The concept of work has long been tied, in one form or another, to our achievement motivation, moral orientation, interests in freedom and equality, and to our concerns about personal and national progress (Salomone and Gould, 1974). The quality of our work is a powerful determinant of the quality of our lives. Small wonder, then, that the opportunity to work is so highly valued by so many people. Surely, this is equally true for deaf people. To what extent will additional education improve their employment prospects?

A comparison of the 1986 unemployment rate by degree attainment is shown in Table 1.

Table 1. 1986 Unemployment Rates of Deaf High School Graduates and Deaf RIT Alumni

GROUP	UNEMPLOYMENT RATE (%)
No College Degree	23.9
RIT Sub-Bachelor Graduates	8.9
RIT Bachelor Degree Recipients	2.4

[4]As with the AFQ, the number of respondents varied, from 622 in 1982 to 748 in 1986.

Data show quite clearly that a degree makes a substantial difference in the employment prospects of deaf adults, and that a higher level degree makes more of a difference. Compared with a high school diploma, a sub-Bachelor degree reduces the likelihood of unemployment by more than 60 percent; holding a Bachelor degree reduces this figure by a rather astonishing 90 percent. A college degree obviously makes it easier to find and hold a job.

Socioeconomic Status

Education has been shown to have a significant effect on socioeconomic status (Jencks et al, 1977; Bowen, 1977), although it is often difficult to compare studies directly because of the many different methods used to define socioeconomic status. In this study, we have chosen to employ occupation, earnings, and Duncan SEI score.

Occupation. The work ethic (previously alluded to) makes important not only the opportunity to work, but also the chance to succeed in a meaningful career. To what extent does a college degree open additional career paths? Data in Table 2 show the kinds of jobs people with high school diplomas and college degrees are able to obtain.

Table 2. Occupations of Deaf High School Graduates and Deaf RIT Alumni

	PERCENT OF GRADUATES IN OCCUPATION		
OCCUPATIONAL LEVEL	NO DEGREE	RIT SUB-BACHELOR	RIT BACHELOR
Managerial/ Professional	6.4	19.4	66.7
Technical, Sales & Admin. Support	35.5	58.4	27.8
Precision Production, Craft, & Repair	9.1	6.7	0.0
Operators, Fabricators & Labor	30.9	13.2	1.9
Other	18.1	2.3	3.6

A college degree obviously opens career options not available to many high school graduates. Those persons with sub-Bachelor degrees are employed more than three times as often in Managerial/Professional occupations (engineers, artists, teachers, administrators) as are high school graduates. Those holding Bachelor degrees are more than ten times as likely to be employed in these professions than are persons without college degrees.

Earnings. Human capital theory (Mincer, 1975; Becker, 1964) posits that, by investing time and effort (typcially in formal education), one can significantly improve future earnings. While the authors make no claim that higher wages are the only, or even perhaps the principal, outcome of higher education, it is well known that many who pursue higher education do so in simultaneous pursuit of a substantial income. To what extent will additional education mean additional income for deaf adults? Earnings data are shown in Table 3.

Table 3. 1986 Earnings of Deaf High School Graduates and Deaf RIT Alumni

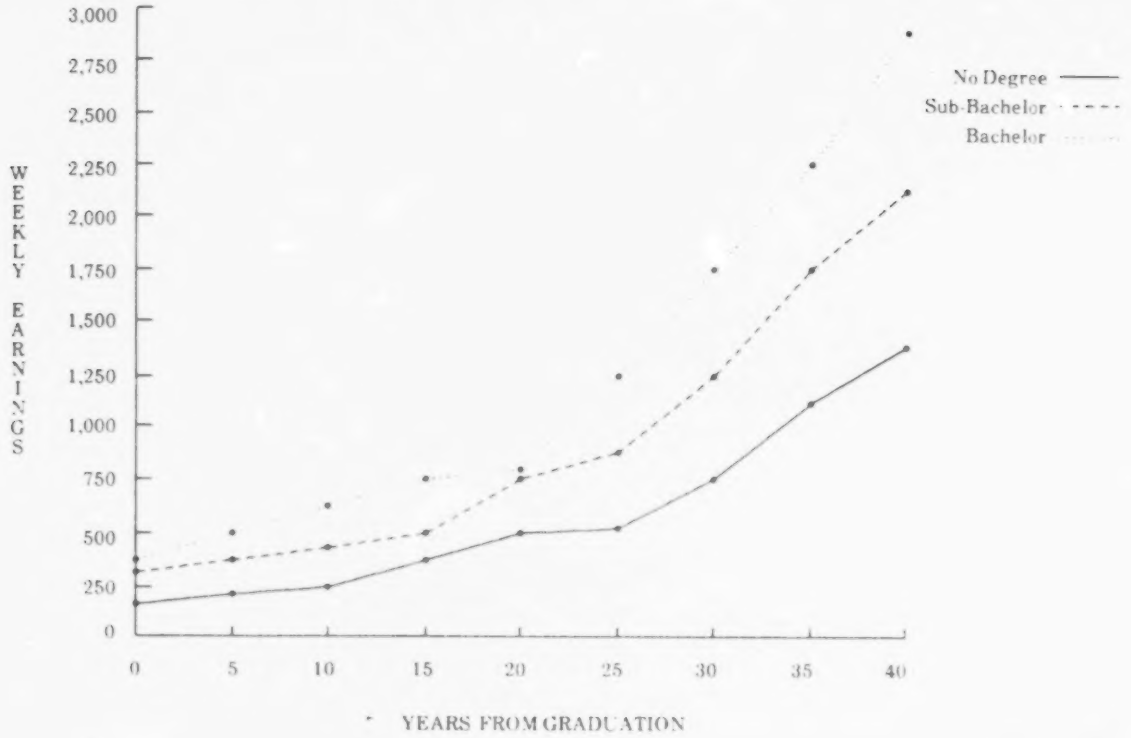
	EARNINGS	
GROUP	MEAN	STD. DEVIATION
No College Degree	$230	$168
RIT Sub-Bachelor Recipients	$339	$131
RIT Bachelor Recipients	$496	$218

Data show quite clearly that salaries are augmented by college degrees. Graduates with sub-Bachelor degrees earn approximately 47 percent more than high school graduates. Salaries of Bachelor degree recipients average more than twice as much as those of persons with lower level degrees.

The earnings advantage derived from a college degree becomes magnified over a lifetime. Weekly earnings over a period of forty years were projected using income data from both surveys and an average annual growth rate of 5.2 percent (Federal Old-Age and Disability Insurance Trust Funds, 1986). Results are shown in Figure 1. It is immediately apparent that differences in earnings by degree are magnified greatly over time.

Duncan SEI Score. The Duncan score is perhaps the best single index of socioeconomic status employed here, as its scale of 1 to 100 is a composite of education required for entry into an occupation, earnings in that occupational

Figure 1. Projected lifetime earnings of deaf workers by degree attained.



area, and prestige ratings associated with the career area. The SEI has been useful in describing educational and occupational attainment (Featherman and Hauser, 1976, 1978; Blau and Duncan, 1967; Stevens and Cho, 1985). Stevens and Cho (1985) also note that the SEI "has also been widely used as a summary measure of persons' backgrounds or current occupational statuses in the study of [a variety of] social processes...(p.143)"

Mean Duncan SEI scores of high school and college graduates are shown in Table 4.

Table 4. SEI Scores of High School Graduates and Recipients of Various Degrees

	SEI SCORE	
GROUP	MEAN	STD. DEVIATION
No College Degree	27.1	15.0
RIT Sub-Bachelor Graduates	38.9	14.7
RIT Bachelor Recipients	59.9	17.2

Data show indisputably that, for deaf adults, college training has a significant effect on socioeconomic status. The more education received, the higher the SEI score. The average SEI of persons without degrees (27.1), is about the score assigned to sheet metal workers, dental assistants, and duplicating machine operators. The SEI for sub-Bachelor graduates (38.9) is roughly equivalent to the score for computer operators, biological technicians, and persons in some sales positions. That of Bachelor graduates (59.9) is approximately the same as physical therapists, kindergarten teachers, and personnel managers.

Vertical Mobility

One of our most cherished ideas as a free society is the concept that people are masters of their own destiny. Highly valued are the opportunities to go where we will, to pursue our own career ambitions, and to be successful if we are diligent in our work.

Closely connected with the notion of control of our own careers is the concept of occupational mobility. To have occupational mobility is to be able to select the type of work one will do and also to have some choice as to the employer for whom one will work. Greater opportunities in this area mean, perhaps most importantly of all, the chance to advance oneself in a career or to move to a career in which there is more room to advance. Occupational mobility is tied inextricably to vertical mobility.

For purposes of this study, vertical mobility is defined as changes in the Duncan SEI score over time (in this study, fifteen years for college graduates and twenty years for those without degrees).[5] SEI scores were regressed on number of years since graduation. Regression lines are shown in Figure 2.

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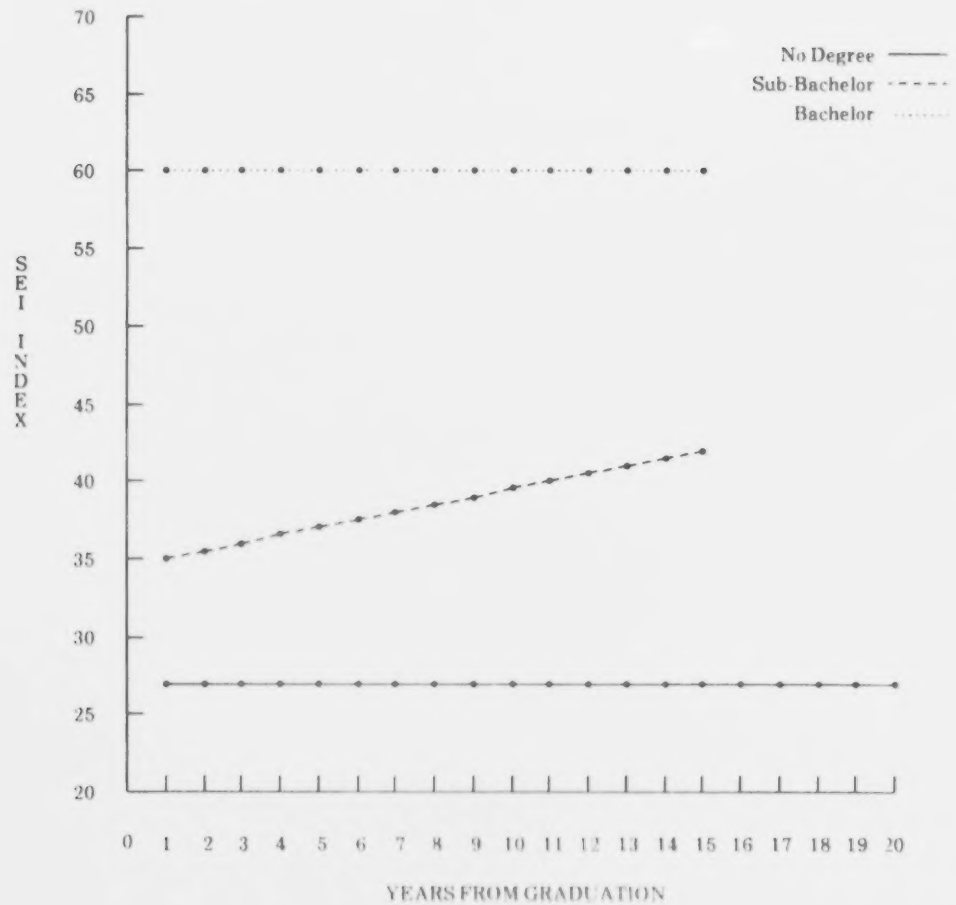
[5]This difference in the analysis is due to the following: NTID began operations in 1968, and has too few graduates from 1969-1971 to permit analysis; hence, the cutoff at the 15 year point. The SSFP survey questioned persons who were 1, 3, 5, 10, and 20 years from graduation; no data were available at 15 years.

Figure 2. Mobility of deaf workers by degree attained.



These data show an almost stunning lack of vertical mobility on the part of high school graduates or the recipients of Bachelor degrees. There is modest upward movement at the sub-Bachelor level, however. Although anything we say at this point must be regarded as speculation, it seems likely that reasons involve some combination of the abilities of the people and the characteristics of their jobs. Those without college degrees are, almost by definition, less able than college graduates in skills considered essential for most White Collar jobs (e.g., reading, writing, mathematics). Additionally, the career ladders of the types of occupations they enter most often (unskilled labor, e.g., printer, assembler, machinist) are either short or non-existent.

While these jobs may be secure and involve some wage increases (such jobs are most often unionized), they are seldom conducive to upward movement.

SEI scores of persons with sub-Bachelor degrees do move up an average of about eight points over fifteen years. These graduates are more able in terms of basic skills than those without degrees, and they pursue additional education much more than their Baccalaureate counterparts (Welsh, 1985). They also move into occupational areas with career ladders. A junior computer programmer can move to programmer and then to systems analyst, for example; a drafter can become an engineer; a medical laboratory technician can advance to medical laboratory technologist. At no point do the scores of this group approach the scores of Bachelor degree recipients, but they do show measurable SEI gains.

In the case of Bachelor degree recipients, the problem is not basic skills; their reading, writing, and mathematics skills are all superior to those of sub-Bachelor graduates (Walter and Welsh, 1986). It may be that difficulties in receipt of incidental information make it harder to keep current professionally at higher occupational levels (Foster, 1986). Also, it is likely that they begin their careers nearer to the ceiling of their occupational potential than do sub-Bachelor graduates. A significant majority of them enter professional occupations (e.g., engineers, teachers, accountants) (Welsh, 1986), and most often the positions above theirs on the career ladder are management positions. Relatively few deaf RIT graduates have moved into management positions (Welsh, 1986), perhaps because management positions place excessive demands on communication skills that are limited by deafness itself.

CONCLUSIONS

Limitations

It must be kept in mind that the college graduates studied are all from one institution, NTID at RIT. They may not be representative of all deaf college graduates. Likewise, high school graduates studied are nearly all graduates of schools for the deaf and may not be representative of all deaf high school graduates.

It should also be noted that there are measures of work force success that were not included in the current study. Success is a multidimensional concept. For some, it is measured by income; for others, security; for still others, the capacity to take pride in the job itself. There are specifics that could be examined: satisfaction with supervisor and co-workers; opportunities for additional training and advancement; the list is long, and many important elements of work force success are not included here. Given these limitations, this report must be regarded as descriptive, rather than evaluative. It would be premature to use this report to evaluate high school or college training. Evaluations should be comprehensive, and more evidence needs to be collected before we can generalize with confidence.

Summary of Findings

Limitations not withstanding, the positive effect of postsecondary technical training on the professional lives of deaf adults is indisputable. Deaf adults with degrees fare much better in the work force than do deaf high school graduates in a number of ways:

First, their unemployment rates are substantially lower. Compared to high school graduates, those with sub-Bachelor degrees reduce their unemployment rate by more than 60 percent, and holders of Bachelor degrees reduce their rate by nearly 90 percent. Deaf college graduates clearly find employment more easily than do non-graduates.

Second, their socioeconomic status is affected positively in several ways. First of all, the jobs they find are significantly different. They are employed much more often in Managerial/Professional occupations. A sub-Baccalaureate degree increases the probability of this type of employment by a factor of three; a Bachelor degree increases it by a factor of ten. Obviously, deaf people increase their employment in White Collar careers as they attain higher degrees.

Third, they earn significantly higher wages over the course of a lifetime. Sub-Bachelor graduates increase their weekly wages by 47 percent over those

of high school graduates; Bachelor degree recipients increase theirs by a dramatic 116 percent. Finally, and closely connected with occupation and earnings, their Duncan socioeconomic index rating typically rises directly with educational attainment.

Obviously, degree attainment affects deaf people in many significant, positive ways. There exists substantial evidence of the need for postsecondary programs for deaf people.

One important area in which a degree appeared not to make as much difference is in upward mobility. Deaf adults without college degrees, and those with Bachelor degrees, showed little vertical mobility. Those with sub-Bachelor degrees did show some gains over a fifteen-year period. It may be that persons without degrees are notably lacking in basic skills that are apparently better developed in persons having sub-Bachelor degrees. In addition, those with sub-Bachelor degrees are more likely not only to enter occupational areas with career ladders than do those without degrees, but also to pursue additional education that might be necessary for advancement.

Relative immobility of Bachelor degree graduates is a bit more difficult to explain. It may well be that they begin their careers much closer to their maximum professional potential than do holders of sub-Bachelor degrees. Most, in order to move up, have to move into management; inherently restricted communication skills make this especially difficult. Additionally, obstacles to the receipt of incidental information may make it especially difficult to maintain professional currency at their occupational levels.

Unfortunately, directly comparable data for hearing persons are not available. Although some data indicate that education is probably associated with upward mobility (Bureau of Labor Statistics, 1982, 1986), the extent of the association cannot be ascertained.

Suggestions for Further Research

We recommend the above study be replicated on deaf graduates of other colleges. All college graduates in this study were graduates of the Rochester

Institute of Technology and may not be representative of all deaf college alumni. We also recommend that subsequent research include mainstreamed deaf secondary school alumni. Nearly all non-degreed persons included in this study were graduates of residential schools for the deaf, and they may be significantly different in some respects from mainstreamed students.

Further, we recommend that other measures of work force success be employed as dependent variables. "Success" and "attainment" can, and do, mean vastly different things to different individuals--satisfaction with the content of work, for example, or the contribution of the job to the individual's self-esteem. The list is very long; much more study is absolutely essential.

Finally, we recommend additional study in the area of mobility. Only one definition of mobility is included in this study, i.e., change in the Duncan SEI rating. It is not the type of "mobility" that everyone strives for. Some regard upward mobility as a movement into higher salary ranges, for example; others consider it an avenue to a more secure occupation. There may be as many different definitions of mobility as there are definitions of success. Further complicating this issue is the fact that many individuals do not, for reasons of timidity, complacency, or genuine contentment, seek mobility. It is very difficult to know just how much mobility is indicative of a successful population, college graduates or otherwise. More study is clearly needed here.

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